AMENDMENTS TO THE CLAIMS

Claims 1-26 are pending. Please amend claims 2-21 and 23-26. No claims are canceled, added, or withdrawn. The following listing of claims replaces all prior versions and listings of claims in the application.

1. (Original) A method for modeling image attention, the method comprising:

preprocessing an image to generate a quantized set of image blocks; and

generating a contrast-based saliency map for modeling one-to-three levels of image attention from the quantized image blocks.

2. (Currently amended) ~~A~~ The method ~~as recited in~~ of claim 1, wherein preprocessing further comprises:

resizing the image such that an aspect ratio of the image is maintained;

transforming the image from a first color space to a second color space that is consistent with human perception; and

making color in texture areas of the image coarser.

3. (Currently amended) ~~A~~ The method ~~as recited in~~ of claim 1, wherein generating the contrast-based saliency map further comprises:

dividing the image subsequent to quantization into multiple perception units; and

calculating a respective contrast of color components for each perception unit; and

normalizing calculated contrasts to smooth the contrasts.

4. (Currently amended) ~~A~~ The method ~~as recited in~~ of claim 1, further comprising extracting attended points from the contrast-based saliency map.

5. (Currently amended) ~~A~~ The method ~~as recited in~~ of claim 1, further comprising extracting an attended area from the contrast-based saliency map.

6. (Currently amended) ~~A~~ The method ~~as recited in~~ of claim 1, further comprising extracting an attended view from the contrast-based saliency map.

7. (Currently amended) A computer-readable medium storing ~~comprising~~ computer-program instructions executable by a processor for modeling image attention, the computer-program instructions when executed by the processor performing operations comprising:

preprocessing an image to generate a quantized set of image blocks; and

generating a contrast-based saliency map for three-level contrast-based image attention analysis from the quantized image blocks.

8. (Currently amended) A computer-readable medium storing ~~comprising~~ computer-program instructions ~~for modeling image attention, the computer-program instructions being~~ executable by a processor, the computer-program instructions when executed by the processor ~~for~~ modeling image attention by operations comprising:

generating a preprocessed image by:

resizing the image such that an aspect ratio of the image is maintained; and

if the image is not already in a color space that is consistent with human perception, transforming the image from a first color space to a second color space that is consistent with human perception;

quantizing the preprocessed image to generate quantized image perception units such that color in texture areas across the quantized image perception units are coarser ~~and normalized~~ as compared to the image; and

generating a contrast-based saliency map from the quantized image blocks, the contrast-based saliency map comprising a respective contrast of color components for each perception unit.

9. (Currently amended) ~~A~~ The computer-readable medium ~~as recited in~~ of claim 8, wherein the computer-program instructions further comprise instructions for extracting attended points from the contrast-based saliency map.

10. (Currently amended) ~~A~~ The computer-readable medium ~~as recited in~~ of claim 8, wherein the computer-program instructions further comprise instructions for extracting an attended view from the contrast-based saliency map.

11. (Currently amended) ~~A~~ The computer-readable medium ~~as recited in~~ of claim 8, wherein the computer-program instructions further comprise instructions for extracting an attended view from the contrast-based saliency map, the attended view being a rectangle $V(C, W, H)$, where C denotes an attention center, and W and H are the width and height of rectangle respectively, the attention center being a centroid of the contrast-based saliency map.

12. (Currently amended) ~~A~~ The computer-readable medium ~~as recited in~~ of claim 8, wherein the computer-program instructions further comprise instructions for determining a size of an attended view in the contrast-based saliency map, the size being related to a 1^{st} order central moment of the contrast-based saliency map.

13. (Currently amended) ~~A~~ The computer-readable medium ~~as recited in~~ of claim 8, wherein the computer-program instructions further comprise instructions for extracting an attended area from the contrast-based saliency map.

14. (Currently amended) ~~A~~ The computer-readable medium ~~as recited in~~ of claim 8, wherein the computer-program instructions further comprise instructions for extracting attended areas from the contrast-based saliency map by performing a fuzzy growing operation on the contrast-based saliency map as a function of two classes of pixels to partition the contrast-based saliency map into two mutually exclusive areas, the two classes of pixels comprising attended and unattended pixel areas.

15. (Currently amended) ~~A~~ The computer-readable medium ~~as recited in~~ of claim 8, wherein the computer-program instructions further comprise instructions for:

performing a fuzzy growing operation to extract attended areas from the contrast-based saliency map, the fuzzy growing operation comprising:

partitioning the contrast-based saliency map into two mutually exclusive areas as a function of classes of pixels comprising attended and unattended pixel areas;

selecting seeds to for the fuzzy growing operation according to a set of criteria such that a seed has a local maximum contrast with respect to other regional perception units and the seed belongs to an attended area;

grouping pixels in the contrast-based saliency map with gray levels that satisfy criteria that indicate attended as compared to unattended areas; and

iteratively growing the attended area by using grouped pixel as seeds in subsequent fuzzy growth operations until no candidates of the perception units can be grouped.

16. (Currently amended) ~~A~~ The computer-readable medium ~~as recited in~~ of claim 8, wherein the computer-program instructions further comprise instructions for representing the contrast-based saliency map as a fuzzy event in probability space to extract attended areas.

17. (Currently amended) ~~A~~ The computer-readable medium ~~as recited in~~ of claim 16, wherein the contrast-based saliency map 216 has L gray levels from g_0 to g_{L-1} and the histogram of saliency map is h_k, k=0, …, L-1, and wherein the computer-program instructions further for representing the contrast-based saliency map as a fuzzy event in probability space further comprise instructions for:

modeling the contrast-based saliency map by a triplet (Ω, k, P), where $\Omega=\{g_0, g_1, \ldots, g_{L-1}\}$ and P is a probability measure of the occurrence of gray levels, i.e., $Pr\{g_k\} = h_k/\sum h_k$;

denoting a membership function $\mu_S(g_k)$ of a fuzzy set $S \in \Omega$ indicating a degree of properties comprising attended areas possessed by gray level g_k; and

representing the properties as a fuzzy event as follows:

$$S = \sum_{g_k \in \Omega} \mu_S(g_k)/g_k \text{; and}$$

computing a probability of the fuzzy event by:

$$P(S)=\sum_{k=0}^{L-1}\mu_S(g_k)P_r(g_k).$$

18. (Currently amended) A computing device for modeling image attention, the computing device comprising a processor coupled to a memory, the memory comprising computer computer-program instructions executable by the processor for:

quantizing a preprocessed image to generate quantized image perception units such that color in texture areas across the quantized image perception units are coarser ~~and normalized~~ as compared to the image, the preprocessed image being a resized version of the image with an original aspect ratio and in a color space consistent with human perception; and

generating a contrast-based saliency map from the quantized image blocks, the contrast-based saliency map comprising a respective contrast of color components for each perception unit.

19. (Currently amended) ~~A~~ The computing device ~~as recited in~~ of claim 18, wherein the computer-program instructions further comprise instructions for extracting attended points from the contrast-based saliency map.

20. (Currently amended) ~~A~~ The computing device ~~as recited in~~ of claim 18, wherein the computer-program instructions further comprise instructions for extracting an attended area from the contrast-based saliency map.

21. (Currently amended) ~~A~~ The computing device ~~as recited in~~ of claim 18, wherein the computer-program instructions further comprise instructions for extracting an attended view from the contrast-based saliency map.

22. (Original) A computing device comprising:

means for preprocessing an image to generate a quantized set of image blocks; and

means for generating a contrast-based saliency map for modeling three-levels of image attentions from the quantized image blocks.

23. (Currently amended) ~~A~~ The computing device ~~as recited in~~ of claim 22, wherein the means for generating the contrast-based saliency map further comprises:

means for dividing the image subsequent to quantization into multiple perception units; and

means for calculating a respective contrast of color components for each perception unit; and

means for normalizing calculated contrasts to smooth the contrasts.

24. (Currently amended) ~~A~~ The computing device ~~as recited in~~ of claim 22, further comprising means for extracting attended points from the contrast-based saliency map.

25. (Currently amended) ~~A~~ The computing device ~~as recited in~~ of claim 22, further comprising means for extracting an attended area from the contrast-based saliency map.

26. (Currently amended) ~~A~~ The computing device ~~as recited in~~ of claim 22, further comprising means for extracting an attended view from the contrast-based saliency map.